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EXAMINER
CANTELMO, GREGG

ART UNIT	PAPER NUMBER
1745	

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7

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/739,483	FITTER, JOHAN CHRISTIAAN	
	Examiner	Art Unit	
	Gregg Cantelmo	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 November 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6 and 10-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 10-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

1. In response to the amendment received November 19, 2002:

   a. Claims 7-9 have been cancelled as per Applicant's request;

   b. Claims 1-6 and 10-21 are pending;

   c. The objections to the specification have been withdrawn;

   d. The 112 rejections have been withdrawn;

   e. The prior art rejections stand;

   f. The double patenting rejections stand.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 20 rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The term "and other ions of metals conventionally used in lead-acid battery cells and other electrochemical cells" is such a broad teaching that it would require one of ordinary skill in the art to employ undue experimentation to determine which ions were conventional metal ions used and further which permutations of ions applied to particular electrochemical cells.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 16-18 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claims 16-18 recites the limitation "the secondary battery" in line 2 of claim 16, line 2 of claim 17 and lines 1 and 4 of claim 18. There is insufficient antecedent basis for this limitation in the claim.

7. Regarding claim 20, the phrase "and other ions" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "or the like"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d). It is unclear as to what ions are included in this group.

8. The term “ions conventionally used in lead-acid battery cells and other electrochemical cells” is unclear. In particular the instant application does not clearly define what ions are held as being conventional. In addition, further advances in the art may alter the scope of conventional ions used in lead acid batteries and other electrochemical cells such that these advances would alter the scope of “convention” ions used in these cells.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1, 2, 6, 10-13, 15-17, 20 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 10-302 785 A (JP '785).

JP '785 discloses an electrochemical cell comprising opposed positive and negative electrodes, an electrolyte in ionic contact with the electrodes and a current impeding medium (fatty acid film) in contact with the electrolyte. Hydrogen is generated by the cell (abstract). Hydrogen being a result of electrolysis of the cell and thus there is a potential applied to the cell which causes electrolysis. Hydrogen generation is suppressed (but not eliminated) and the current is reduced by the presence of the fatty acid film formed on the active material surface of an electrode and thus in contact with the electrolyte (abstract).

Furthermore, Applicant is reminded that claim 1 is drawn to an electrochemical cell and not a method of operating the electrochemical cell. Thus the aspects of claim 1 which have been accorded patentable weight are only those limitations which define the cell alone and not process conditions applied to the cell. It has been held that the recitation that an element is "capable of" performing a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchinson*, 69 USPQ 138 (as applied to claim 1).

A fatty acid film being an example of a non-ionic compound (as applied to claim 2).

JP '785 is drawn to a method of reducing liquid loss in an electrochemical cell having opposed positive and negative electrodes, and electrolyte in contact with the electrodes and being disposed to cause electrolysis of the electrolyte when a sufficient amount of potential is applied across the electrodes, the method including the step of introducing into the cell a current impeding medium, a fatty acid, that provides, through contact with the electrolyte, a resistive path in a flow of a current between the electrodes when a potential sufficient to cause electrolysis of the electrolyte is applied across the electrodes to activate the current impeding medium into providing a resistive path to the flow of a current between the electrodes and thereby to reduce electrolysis of the electrolyte.

The fatty acid is the current impeding medium which is formed on the active material (of an electrode and therefore in contact with the electrolyte). Hydrogen is clearly generated by the cell (see abstract) and thus the potential applied to the cell is one which causes hydrogen generation and further electrolysis of the electrolyte (abstract). The fatty acid film (current impeding medium) suppresses hydrogen generation (thus reduces electrolysis) and reduces the current in the cell between the electrodes (abstract as applied to claim 6).

The fatty acid also present in the negative electrode, forms a film on the active material surface of the negative electrode thus acting as a barrier or impediment for gas evolution from the negative electrode (abstract as applied to claim 10).

The gas bubbles are hydrogen bubbles and the ions attracted to the negative electrode would be hydrogen ions (abstract as applied to claim 11).

JP '785 discloses an electrochemical cell comprising opposed positive and negative electrodes, an aqueous electrolyte in ionic contact with the electrodes, the electrochemical cell being disposed to cause electrolysis of the electrolyte when a sufficient amount of potential is applied across the electrodes, the electrolysis being caused by a flow of current between the electrodes and being accompanied by a flow of ions to the negative electrode and/or a flow of bubbles from the negative electrode, the electrochemical cell further comprising a current impeding medium, a fatty acid, that provides, through contact with the electrolyte, an impediment of barrier over a surface of the negative electrode when a sufficient potential is applied across the electrodes to cause electrolysis of the electrolyte, the impediment or barrier providing at least one of: a reduction in the flow of current between the electrodes, a reduction in the flow of ions to the negative electrode, or a reduction in the flow of gas bubbles from the negative electrode (abstract as applied to claim 12).

The fatty acid is the current impeding medium which is formed on the active material (of an electrode and therefore in contact with the electrolyte). Hydrogen is clearly generated by the cell (see abstract) and thus the potential applied to the cell is one which causes hydrogen generation and further electrolysis of the electrolyte (abstract). The fatty acid film, which is formed on the active material of the negative electrode reduces the flow of gas bubbles from the negative electrode. The fatty acid film (current impeding medium) suppresses hydrogen generation (thus reduces electrolysis) and reduces the current in the cell between the electrodes (abstract as applied to claim 12).

When a potential ordinarily sufficient to cause electrolysis of the electrolyte is applied to the electrodes the fatty acid film formed on the active material of the negative electrode traps gas bubbles evolving from the negative electrode (abstract as applied to claim 13).

The battery is a rechargeable lead acid battery used in automobiles which is a secondary battery (paragraphs [0002] and [0003] as applied to claim 15).

Adding 0.5-1% of stearic acid does not negatively affect the cycling of the cell (paragraph [0012] as applied to claim 16).

Adding 0.5-1% of stearic acid to the cell provides improved cycling performance of the cell compared to a cell having more than 1% stearic acid (paragraph [0012] as applied to claim 17).

The battery is a lead acid battery and has a flow of ions conventionally used in lead acid battery cells (as applied to claim 20).

The current impeding medium is soluble in particular solvents (note that the solvent nor the point at which the medium is dissolved are unspecified by the claim) and further forms a film on the negative electrode to form the resistive path (as applied to claim 21).

Response to Arguments

11. Applicant's arguments filed November 19, 2002 have been fully considered but they are not persuasive.

Applicant appears to be arguing process conditions applied to the cell. Such arguments are not germane to claims drawn to the electrochemical cell since they do not further define the product itself but instead to a manner of operating the cell. Thus such arguments fail to persuade the Examiner that the prior art product and instant claimed electrochemical cell are structurally different.

While intended use recitations and other types of functional language cannot be entirely disregarded. However, in apparatus, article, and composition claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); In re Otto, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963).

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). See also MPEP § 2114.

The manner of operating the device does not differentiate an apparatus claim from the prior art. A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

This is applied to claims 1, 2, 12-13, 15-17, 20 and 21.

With respect to claims 6, 10 and 11:

Applicant appears to argue that the prior art teachings do not operate at a potential sufficient to cause electrolysis. If so, the Examiner respectfully disagrees.

JP '785 forms hydrogen in the cell. Hydrogen generation is a by-product of electrolysis of the cell. In order to suppress (not explicitly prevent as stated by Applicant), JP '785 employs a fatty acid film on the active material of the negative electrode. The result shown by JP '785 is that the amount of hydrogen generated by the cell is suppressed for the same potential applied to the cell which would normally cause electrolysis. Thus it appears that the potential applied to the cell of JP '785 is one in which electrolysis occurs, but whereby the fatty acid film suppresses this formation for the given potential.

Applicant's argument that the term "film" used in the reference is not a barrier or impediment for gas is not persuasive.

See paragraph [0013] wherein JP '785 discloses that the fatty acid coats the active material front face. And further that this coating suppresses hydrogen generation on the negative electrode at a potential wherein electrolysis would occur is the fatty acid film were not present. The film physically separates which electrically couples the active material of the negative electrode to the electrolyte. Thus any gas evolving from the negative electrode would have its path clearly impeded by the surface upon which the fatty acid is coated. See also MPEP § 2112.

Claim Rejections - 35 USC § 102

12. Claims 1-6, and 10-21 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 50-091728 (JP '728).

JP '728 discloses an electrochemical cell comprising opposed positive and negative electrodes, an electrolyte in ionic contact with the electrodes and a current impeding medium, dodecyldimethylbenzylammonium chloride, in contact with the electrolyte. Hydrogen is generated by the cell (abstract). Hydrogen being a result of electrolysis of the cell and thus there is a potential applied to the cell which causes electrolysis. Hydrogen generation is suppressed and the current is reduced by the presence of the fatty acid film formed on the active material surface of an electrode and thus in contact with the electrolyte (abstract).

Furthermore, Applicant is reminded that claim 1 is drawn to an electrochemical cell and not a method of operating the electrochemical cell. Thus the aspects of claim 1 which have been accorded patentable weight are only those limitations which define the cell alone and not process conditions applied to the cell. It has been held that the recitation that an element is "capable of" performing a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchinson*, 69 USPQ 138 (as applied to claim 1).

The current reducing additive is dodecyldimethylbenzylammonium chloride (as applied to claims 2 and 3).

The additive is added in various weight percents (see page 142 of the reference) which overlap the additive range of claims 4 and 5.

JP '728 is drawn to a method of reducing liquid loss in an electrochemical cell having opposed positive and negative electrodes, and electrolyte in contact with the electrodes and being disposed to cause electrolysis of the electrolyte when a sufficient amount of potential is applied across the electrodes, the method including the step of introducing into the cell a current impeding medium, dodecyldimethylbenzylammonium chloride, that provides, through contact with the electrolyte, a resistive path in a flow of a current between the electrodes when a potential sufficient to cause electrolysis of the electrolyte is applied across the electrodes to activate the current impeding medium into providing a resistive path to the flow of a current between the electrodes and thereby to reduce electrolysis of the electrolyte.

The dodecyldimethylbenzylammonium chloride is the current impeding medium which is formed on the active material (of an electrode and therefore in contact with the electrolyte). Hydrogen is clearly generated by the cell and thus the potential applied to the cell is one which causes hydrogen generation and further electrolysis of the electrolyte (abstract). The dodecyldimethylbenzylammonium chloride (current impeding medium) suppresses hydrogen generation (thus reduces electrolysis) and reduces the current in the cell between the electrodes (abstract as applied to claim 6).

The dodecyldimethylbenzylammonium chloride also present in the negative electrode, forms a film on the active material surface of the negative electrode thus

acting as a barrier or impediment for gas evolution from the negative electrode (abstract as applied to claim 10).

The gas bubbles are hydrogen bubbles and the ions attracted to the negative electrode would be hydrogen ions (abstract as applied to claim 11).

JP '785 discloses an electrochemical cell comprising opposed positive and negative electrodes, an aqueous electrolyte in ionic contact with the electrodes, the electrochemical cell being disposed to cause electrolysis of the electrolyte when a sufficient amount of potential is applied across the electrodes, the electrolysis being caused by a flow of current between the electrodes and being accompanied by a flow of ions to the negative electrode and/or a flow of bubbles from the negative electrode, the electrochemical cell further comprising a current impeding medium, dodecyldimethylbenzylammonium chloride, that provides, through contact with the electrolyte, an impediment of barrier over a surface of the negative electrode when a sufficient potential is applied across the electrodes to cause electrolysis of the electrolyte, the impediment or barrier providing at least one of: a reduction in the flow of current between the electrodes, a reduction in the flow of ions to the negative electrode, or a reduction in the flow of gas bubbles from the negative electrode (abstract as applied to claim 12).

The dodecyldimethylbenzylammonium chloride is the current impeding medium which is formed on the active material (of an electrode and therefore in contact with the electrolyte). Hydrogen is clearly generated by the cell and thus the potential applied to the cell is one which causes hydrogen generation and further electrolysis of the

electrolyte. The dodecyldimethylbenzylammonium chloride, which is formed on the active material of the negative electrode reduces the flow of gas bubbles from the negative electrode. The dodecyldimethylbenzylammonium chloride (current impeding medium) suppresses hydrogen generation (thus reduces electrolysis) and reduces the current in the cell between the electrodes (abstract as applied to claim 12).

Since the current reducing additive, dodecyldimethylbenzylammonium chloride, is the same material as that disclosed in the instant application it is expected to have the same effect on reducing water loss, reducing gas evolution, and having a head for adsorbing to the negative electrode and a and tail arrangement to trap gas bubbles (abstract as applied to claims 12-14).

The battery is a recharging battery (has charging and discharging functions) and is exemplary of a secondary battery (abstract as applied to claim 15).

The current impeding medium is dodecyldimethylbenzylammonium chloride which is a quaternary ammonium compound. Since this material is an exemplary current impeding medium as taught by the instant application, it is expected that the same material used in the same manner will have the same properties and characteristics including: being a current impeding medium which does not negatively affect a discharging cycle (claim 16); and being a current impeding medium which provides improved cycling performance of the cell compared to a cell that does not have the additive (abstract), noting further that the manner in which the cycling is improved is undefined since the instant claim does not provide a standard for comparison (claim 17).

The cell has an inherent threshold potential and given that the medium of JP '728 is a material exemplified by the instant application as a current impeding medium, the dodecyldimethylbenzylammonium chloride medium reduces electrolysis above a threshold potential while not negatively affecting the operation of the cell below the threshold potential (claim 18).

The cell has an inherent threshold potential and given that the medium of JP '728 is a material exemplified by the instant application as a current impeding medium, the dodecyldimethylbenzylammonium chloride medium is a barrier or impediment as discussed above and is self regulating. Thus the greater the amount of electrolysis, the greater the number of gas bubbles trapped and the more effective the impediment or barrier to the flow of ions to the negative electrode, thereby the more electrolysis is reduced, and vice versa (as applied to claim 19).

The battery is a zinc battery and has a flow of ions conventionally used in lead acid battery cells and other electrochemical cells (as applied to claim 20).

The dodecyldimethylbenzylammonium chloride is soluble and in contact (attached) to the negative electrode to form a resistive path (as applied to claim 21).

Response to Arguments

13. Applicant's arguments filed November 19, 2002 have been fully considered but they are not persuasive.

Applicant argues that JP '728 fails to teach or suggest that dodecyldimethylbenzylammonium chloride can be used as a current impeding medium

for reducing electrolysis when a potential sufficient to cause electrolysis is applied to the electrochemical cell.

Applicant appears to be arguing process conditions applied to the cell. Such arguments are not germane to claims drawn to the electrochemical cell since they do not further define the product itself but instead to a manner of operating the cell. Thus such arguments fail to persuade the Examiner that the prior art product and instant claimed electrochemical cell are structurally different.

While intended use recitations and other types of functional language cannot be entirely disregarded. However, in apparatus, article, and composition claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); In re Otto, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963).

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). See also MPEP § 2114.

The manner of operating the device does not differentiate an apparatus claim from the prior art. A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural

limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

This is applied to claims 1-5, 12-21.

With respect to the process claims 6, 10 and 11:

JP '758 restricts, but does not eliminate the generation of hydrogen gas in the electrochemical cell. The formation of hydrogen gas is a resultant product from electrolysis within the cell. The hydrogen gas formation is restricted by the presence of the quaternary ammonium salt and not by reducing the potential so that hydrogen is not generated. Therefore, the potential applied to the process of JP '758 must be one wherein electrolysis occurs since hydrogen gas is generated by the cell.

Applicant argues that because JP '785 is silent as to dodecyldimethylbenzylammonium chloride being used as a current impeding medium for reducing electrolysis when a potential sufficient to cause electrolysis is applied to the electrochemical cell that there is no teaching or suggestion that this material can be used as a current impeding medium for reducing electrolysis.

The Examiner respectfully disagrees.

JP '758 restricts, but does not eliminate the generation of hydrogen gas in the electrochemical cell. The formation of hydrogen gas is a resultant product from electrolysis within the cell. The hydrogen gas formation is restricted by the presence of the quaternary ammonium salt and not by reducing the potential so that hydrogen is not generated. Thus JP '758 is not silent with respect to the

dodecyldimethylbenzylammonium chloride being used as a current impeding medium for reducing electrolysis when a potential sufficient to cause electrolysis is applied to the electrochemical cell.

See also MPEP § 2112.

Claim Rejections - 35 USC § 102

14. Claims 1, 2, and 12-21 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. patent No. 3,877,993 (Davis).

Davis discloses an electrochemical cell comprising opposed positive and negative electrodes, an electrolyte in ionic contact with the electrodes and a current impeding medium, quaternary ammonium compound, in contact with the electrolyte. Hydrogen is generated by the cell (abstract). Hydrogen being a result of electrolysis of the cell and thus there is a potential applied to the cell which causes electrolysis. Hydrogen generation is suppressed and the current is reduced by the presence of the fatty acid film formed on the active material surface of an electrode and thus in contact with the electrolyte (prior art claim 1).

Furthermore, Applicant is reminded that claim 1 is drawn to an electrochemical cell and not a method of operating the electrochemical cell. Thus the aspects of claim 1 which have been accorded patentable weight are only those limitations which define the cell alone and not process conditions applied to the cell. It has been held that the recitation that an element is "capable of" performing a function is not a positive limitation

but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchinson*, 69 USPQ 138 (as applied to claim 1).

The current reducing additive is a quaternary ammonium compound (prior art claim 1 as applied to claim 2). The transitional term "comprising" (and other comparable terms, e.g., "containing," and "*including*") is "open-ended" -it covers the expressly recited subject matter, alone or in combination with unrecited subject matter. See, e.g., Genentech, Inc. v. Chiron Corp., 112 F.3d 495, 501, 42 USPQ2d 1608, 1613 (Fed. Cir. 1997). See MPEP § 2111.03. For example, in claim 2 the claim recites the current reducing additive is selected from the group consisting of quaternary ammonium compounds including particular compounds. Use of the term including, being open-ended, does not limit the quaternary ammonium compound to only those listed in the claims. Thus claim 2 is open to any quaternary ammonium compound (as applied to claim 2).

Davis is drawn to a method of reducing liquid loss in an electrochemical cell (col. 1, ll. 10-20) having opposed positive and negative electrodes, and electrolyte in contact with the electrodes and being disposed to cause electrolysis of the electrolyte when a sufficient amount of potential is applied across the electrodes, the method including the step of introducing into the cell a current impeding medium, quaternary ammonium compound, that provides, through contact with the electrolyte, a resistive path in a flow of a current between the electrodes when a potential sufficient to cause electrolysis of the electrolyte is applied across the electrodes to activate the current impeding medium

into providing a resistive path to the flow of a current between the electrodes and thereby to reduce electrolysis of the electrolyte.

Davis discloses an electrochemical cell comprising opposed positive and negative electrodes, an aqueous electrolyte in ionic contact with the electrodes, the electrochemical cell being disposed to cause electrolysis of the electrolyte when a sufficient amount of potential is applied across the electrodes, the electrolysis being caused by a flow of current between the electrodes and being accompanied by a flow of ions to the negative electrode and/or a flow of bubbles from the negative electrode, the electrochemical cell further comprising a current impeding medium, quaternary ammonium compound, that provides, through contact with the electrolyte, an impediment of barrier over a surface of the negative electrode when a sufficient potential is applied across the electrodes to cause electrolysis of the electrolyte, the impediment or barrier providing at least one of: a reduction in the flow of current between the electrodes, a reduction in the flow of ions to the negative electrode, or a reduction in the flow of gas bubbles from the negative electrode (abstract as applied to claim 12).

The quaternary ammonium compound is the current impeding medium which is formed on the active material (of an electrode and therefore in contact with the electrolyte). Hydrogen is clearly generated by the cell and thus the potential applied to the cell is one which causes hydrogen generation and further electrolysis of the electrolyte. The quaternary ammonium compound, which is formed on the active material of the negative electrode reduces the flow of gas bubbles from the negative

electrode. The quaternary ammonium compound (current impeding medium) suppresses hydrogen generation (thus reduces electrolysis) and reduces the current in the cell between the electrodes (abstract as applied to claim 12).

Since the current reducing additive, quaternary ammonium compound, is the same material as that disclosed in the instant application it is expected to have the same effect on reducing water loss, reducing gas evolution, and having a head for adsorbing to the negative electrode and a and tail arrangement to trap gas bubbles (prior art claim 1 and col. 1, ll. 10-20 as applied to claims 12-14).

The battery is a secondary battery (col. 2, ll. 24-30 as applied to claim 15).

The current impeding medium is a quaternary ammonium compound. Since this material is an exemplary current impeding medium as taught by the instant application, it is expected that the same material used in the same manner will have the same properties and characteristics including: being a current impeding medium which does not negatively affect a discharging cycle (claim 16); and being a current impeding medium which provides improved cycling performance of the cell, noting further that the manner in which the cycling is improved is undefined since the instant claim does not provide a standard for comparison (claim 17).

The cell has an inherent threshold potential and given that the medium of Davis is a material exemplified by the instant application as a current impeding medium, the quaternary ammonium compound medium reduces electrolysis above a threshold potential while not negatively affecting the operation of the cell below the threshold potential (claim 18).

The cell has an inherent threshold potential and given that the medium of Davis is a material exemplified by the instant application as a current impeding medium, the quaternary ammonium compound medium is a barrier or impediment as discussed above and is self regulating. Thus the greater the amount of electrolysis, the greater the number of gas bubbles trapped and the more effective the impediment or barrier to the flow of ions to the negative electrode, thereby the more electrolysis is reduced, and vice versa (as applied to claim 19).

The battery is a zinc battery and has a flow of ions conventionally used in lead acid battery cells and other electrochemical cells (as applied to claim 20).

The quaternary ammonium compound is soluble and in contact (attached) to the negative electrode to form a resistive path (as applied to claim 21).

Response to Arguments

15. Applicant's arguments filed November 19, 2002 have been fully considered but they are not persuasive.

Applicant argues that Davis fails to teach or suggest that quaternary ammonium compound can be used as a current impeding medium for reducing electrolysis when a potential sufficient to cause electrolysis is applied to the electrochemical cell.

Applicant appears to be arguing process conditions applied to the cell. Such arguments are not germane to claims drawn to the electrochemical cell since they do not further define the product itself but instead to a manner of operating the cell. Thus

such arguments fail to persuade the Examiner that the prior art product and instant claimed electrochemical cell are structurally different.

While intended use recitations and other types of functional language cannot be entirely disregarded. However, in apparatus, article, and composition claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); In re Otto, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963).

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). See also MPEP § 2114.

The manner of operating the device does not differentiate an apparatus claim from the prior art. A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). See also MPEP § 2112.

This is applied to claims 1, 2 and 12-14.

With respect to the process claims 6, 10 and 11:

The rejection of Davis drawn to the process has been withdrawn since it deals with reduction of the attack on zinc anodes in stored batteries and not when the batteries have a potential applied thereto.

Double Patenting

16. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

17. Claims 1-3, 6 and 10-14 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 11, 15 and 16 of copending Application No. 09/927,805. Although the conflicting claims are not identical, they are not patentably distinct from each other.

A copy of US Patent Application Publication No. 2002/0038765 has been provided, it being the published application of copending Application No. 09/927,805.

Copending Application No. 09/927,805 claims an electrochemical cell comprising a positive electrode, an opposed negative electrode, and an aqueous electrolyte for use in a battery cell, the electrolyte being in ionic contact with the negative electrode. An

additive material is provided for inhibiting electrodeposition on the negative electrode (claim 11). The additive material is recited in claim 16 which is the same materials disclosed and claimed in the instant application as the current reducing additive. Since these materials are the same, they are expected to have the same inherent properties (as applied to instant claims 1-3). The limitations of claims 11 and 16 anticipate the limitations of instant claims 1-3.

Copending Application No. 09/927,805 provides an electrochemical cell having a step of providing n-alkyl dimethyl benzyl ammonium chloride or sodium dioctyl sulfosuccinate to an electrochemical cell having an electrolyte and electrodes. Since these materials are the same, they are expected to have the same inherent properties (claims 11 and 16 as applied to instant claims 6 and 10-11).

The limitations of claims 11, 15, and 16 anticipate the limitations of instant claims 6-11.

Copending Application No. 09/927,805 claims an electrochemical cell comprising opposed positive and negative electrodes and aqueous electrolyte in ionic contact with the electrodes and a current reducing additive, n-alkyl dimethyl benzyl ammonium chloride or sodium dioctyl sulfosuccinate (claim 16). The electrolyte is engendered with a deposition modifying agent, n-alkyl dimethyl benzyl ammonium chloride or sodium dioctyl sulfosuccinate, for inhibiting dendritic electrodeposition on the negative electrode. The modifying agent being the same as the current reducing additive of the instant application is arranged in the electrolyte as in the instant application and is held to be arranged to adhere or adsorb to the negative electrode and form an impediment or

barrier over a surface of the negative electrode (claims 11 and 16 as applied to claim 12). Since these materials are the same, they are expected to have the same inherent properties (claims 11 and 16 as applied to instant claim 13 and 14).

The battery is a secondary battery (claim 14 as applied to instant claims 15-18).

The current impeding medium is n-alkyl dimethyl benzyl ammonium chloride. Since this material is an exemplary current impeding medium as taught by the instant application, it is expected that the same material used in the same manner will have the same properties and characteristics including: being a current impeding medium which does not negatively affect a discharging cycle (claim 16 as applied to instant claim 16); and being a current impeding medium which provides improved cycling performance of the cell, noting further that the manner in which the cycling is improved is undefined since the instant claim does not provide a standard for comparison (claim 16 as applied to instant claim 17).

The cell has an inherent threshold potential and given that the medium of Copending Application No. 09/927,805 is a material exemplified by the instant application as a current impeding medium, the n-alkyl dimethyl benzyl ammonium chloride medium reduces electrolysis above a threshold potential while not negatively affecting the operation of the cell below the threshold potential (claim 16 as applied to instant claim 18).

The cell has an inherent threshold potential and given that the medium of Copending Application No. 09/927,805 is a material exemplified by the instant application as a current impeding medium, the n-alkyl dimethyl benzyl ammonium

chloride medium is a barrier or impediment as discussed above and is self regulating. Thus the greater the amount of electrolysis, the greater the number of gas bubbles trapped and the more effective the impediment or barrier to the flow of ions to the negative electrode, thereby the more electrolysis is reduced, and vice versa (claim 16 as applied to instant as applied to claim 19).

The battery has a flow of ions conventionally used in lead acid battery cells and other electrochemical cells (claim 11 as applied to instant claim 20).

The n-alkyl dimethyl benzyl ammonium chloride is soluble and in contact (attached) to the negative electrode to form a resistive path (instant claims 1 and 7 as applied to claim 21).

The difference between instant claim 12 and claim 11 of Copending Application No. 09/927,805 is that claim 11 of Copending Application No. 09/927,805 does not explicitly recite that the aqueous electrolyte is in ionic contact with both the negative and positive electrodes.

In order for the electrochemical cell to effectively operate it is imperative that the electrolyte be in ionic contact with both the positive and negative electrodes. These three components when in ionic contact provide for ion mobility between the electrodes.

The motivation for providing the electrolyte in ionic contact with both the negative and positive electrodes is that it enables ionic mobility between the opposed electrodes.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the claims of Copending Application No. 09/927,805 by having the electrolyte in ionic contact with both the negative and positive

electrodes since it would have enabled ionic mobility between the opposed electrodes through the electrolyte of an electrochemical cell.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is (703) 305-0635. The examiner can normally be reached on Monday through Thursday from 8:00 a.m. to 5:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the

examiner's supervisor, Pat Ryan, can be reached on (703) 308-2383. FAX communications should be sent to the appropriate FAX number: (703) 872-9311 for After Final Responses only; (703) 872-9310 for all other responses. FAXES received after 4 p.m. will not be processed until the following business day. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

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January 14, 2003